Technology Transfer Activities

1981

A joint project under the AGRICULTURE RESOURCES DEVELOPMENT AGREEMENT between the DEPARTMENT OF REGIONAL ECONOMIC EXPANSION (DREE) and the PROVINCE OF NEW BRUNSWICK

INTRODUCTION

Technology Transfer is a program funded under the Agricultural Resource Development Agreement (A.S.A. II) to provide financial assistance in sharing the risk of introducing new farming technology to New Brunswick.

This program was established to introduce new technology, test this technology under New Brunswick conditions and to communicate the results to other potential users.

This program is administered by a Committee composed of the following:

Chairman: W.C. Durant, Assistant Director, Agricultural Engineering Branch, N.B. Department of Agriculture

Secretary: Betty Poirier, Administrative Services Officer, Agricultural Engineering Branch, N.B. Department of Agriculture

Members: R. M. Colpitts, Assistant Director, Livestock Branch, N.B. Department of Agriculture

Dr. Ibrahim Ghanem, Head, Land Resources Division, N.B. Department of Agriculture

Peter S. Jones, Head, Potato Consultant Services, N.B. Department of Agriculture

Roger LeBlanc, Distribution Officer, Market Development Branch, N.B. Department of Agriculture

Ross Lister, Supervisor, Farm Management, Extension and Economics Branch, N.B. Department of Agriculture

Colin McLeod, Agricultural Mechanization Engineer, Agriculture Canada

For further information about the program or the results of any of the projects completed under this program please contact Mr. Bill Durant, Chairman, Technology Transfer Program, N.B. Department of Agriculture, P. O. Box 6000, Fredericton, New Brunswick, E3B 5H1.

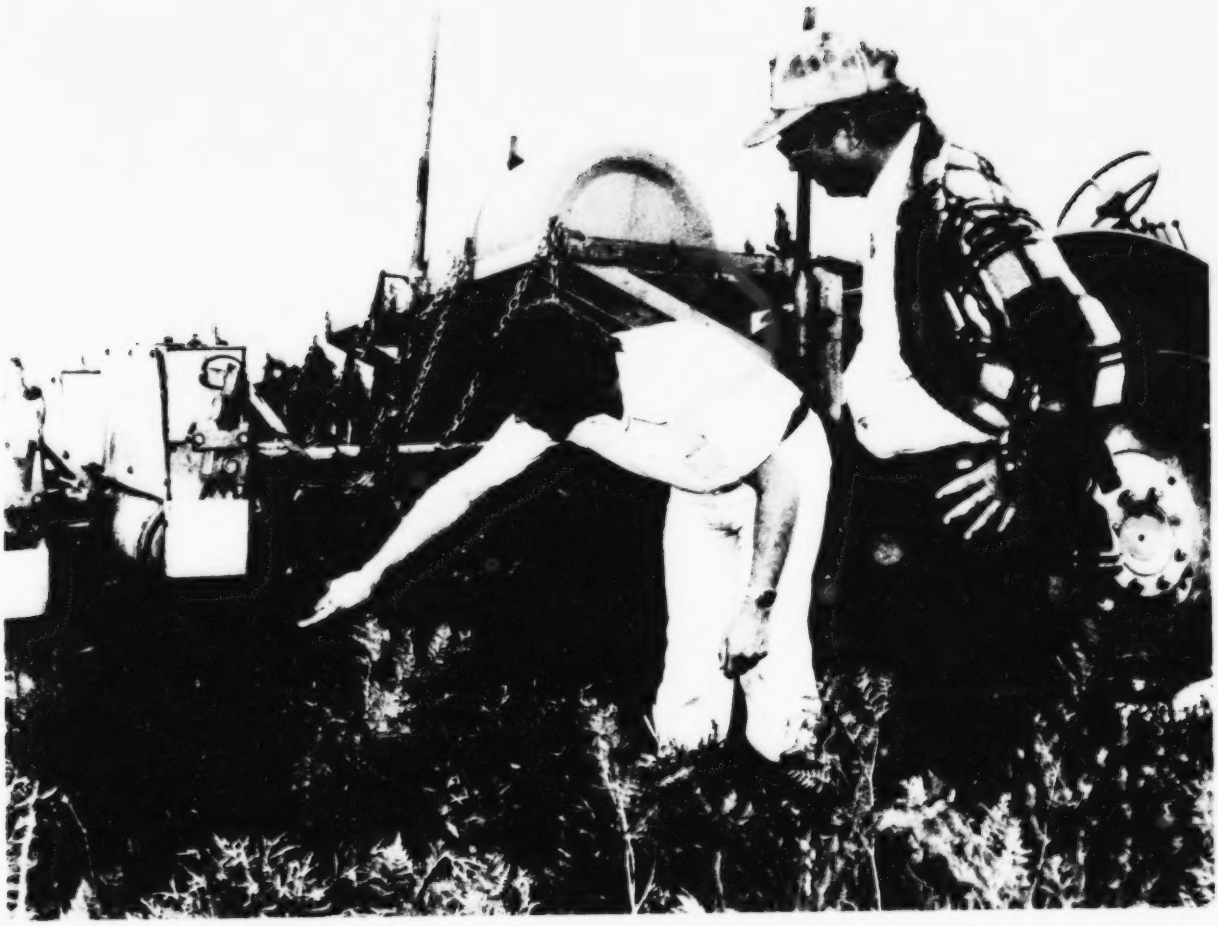
This publication is made possible under the Agricultural Resource Development Agreement between Department of Regional Economic Expansion (DREE) and the Province of New Brunswick.

TABLE OF CONTENTS

		Page
INTRODUCTION		
FRUITS & VEGETABLES		
80H1	Evaluation of Trickle Irrigation and Plastic Mulch on Tomatoes	1
80H2	Cultivation of the Fiddlehead Fern	2
80H9	Evaluation of Mulch and Plug Transplant Equipment	3
80H10	Evaluation of Precision Vegetable Seeders	4
80H11	Screening Roller Applied Herbicides on Native Stand Lowbush Blueberries	5
80H12	Blueberry Pest Management	6
80H20	Evaluation of the Use of Plastic Mulch and Row Tunnels on Vegetable Crops	7-8
GENERAL		
79G3	To test and evaluate a side-mounted busy-hog rotary mower similar to the wood mower	9
80G3	Application of Meterological data to Fruit Production	10
80G5	Farm Weather Forecasts for Fruit & Vegetable Producers	11
LIVESTOCK		
78L2	Evaluation of Compressed Air Manure Mover	12
79L1	Demonstration to Roughen Cement Floors in Free Stall Dairy Barn	13
79L3	Transfer of Embryos from Superior Brood Cows	14

		Page
79L6	Solar Ventilation Air Preheater for Swine Barn	15
79L7	Artificial Insemination for Dairy Goats in New Brunswick	16-17
80L9	Rabbit Pasterella Vaccine Project	18
80L10	Installation of Equi-potential floor in Dairy Stanchion Barn	19
LIVESTOCK FEED		
79LF2	Establishment of Legumes or Grass Legumes in Sod	20
79LF8	Byproduct Feeding of Hogs	21
79LF9	Off-Grade Potato Processing as Livestock Feed	22
80LF4	Forage Quality Forecast	23
80LF7	Broiler Trial Evaluating the Feed Value of Local Wheat	24
80LF11	The New Uni-System Harvester	25
80LF15	Cereal Variety and Fertility Trials in the Grand Falls Area	26
80LF16	Grain Production Management Project	27
80LF19	Evaluation of Push-Off Buckrake	28
POTATOES		
80P3	Pest Management Program: Activity 1, Generation of Data	29
80P4	Pest Management Program: Activity 11, Creation of Information	30
80P5	To test and evaluate the Allan Potato Planter in Comparison to Hand-Seeding Potatoes	31
80P9	Factors in Seed Potato Management That Will Influence Yield Response such as Seeding Warming Prior to Planting	32

		Page
80P12	Evaluation of High Limestone Applications on pH, yield, Uptake of Nutrients and Incidence of Scab in Two Potato Cultivators--- Netted Gem and Kennebec	33
80P13	Evaluation of the Nimos Haulm Puller	34



FRUITS & VEGETABLES

ACTIVITY NUMBER: 80H1

ACTIVITY TITLE: Evaluation of Trickle Irrigation and Plastic Mulch on Tomatoes.

ACTIVITY ORIGINATOR: A. B. MacDonald & Son, R.R. # 2, Hatfield Point, N.B., and Department of Agriculture.

ACTIVITY OBJECTIVE: To evaluate the use of black plastic mulch to protect the tomato plant from weeds, ground damage and rot, and to test the effectiveness of the trickle or drip irrigation system.

ACTIVITY RESULTS: It is evident that black plastic mulch provides excellent weed control and that trickle irrigation has several advantages. However, in this test, there were problems basically because the farm operator was not familiar with this type of system. Therefore, comparisons in fruit quality were inconclusive and further testing will be necessary. This project also includes the testing of trickle irrigation in strawberry plantings. One problem noted is that the plastic trickle tubes for two or three days after installation attract Red Foxes as a result of their odor. Chemical repellant may be necessary to solve that problem.

ACTIVITY NUMBER: 80H2

ACTIVITY TITLE: Cultivation of the Fiddlehead Fern.

ACTIVITY ORIGINATOR: Brian Dykeman, Plant Industry Branch, N.B.D.A.

ACITVITY OBJECTIVE: To develop a crop management system for cultivated ostrich ferns, to determine the economic feasability of the crop and to demonstrate the production of the fern to New Brunswick producers.

ACTIVITY RESULTS: Early work and data in this project looks very encouraging. But three more years of work are required before a production system can be evaluated and the system demonstrated and cummunicated to the agricultural community. From earlier work, it is evident that superior clones can be selected from the wild. So far, there have been no negative results and several producers have indicated interest. From data obtained, it appears yields in excess of 7,000 kg/ha may be possible. This is well above the 1,500 kg/ha expected when the project was first undertaken and these figures dramatically change the economic potential of the crop.

ACTIVITY NUMBER: 80H9

ACTIVITY TITLE: Evaluation of Mulch and Plug Transplant Equipment.

ACTIVITY ORIGINATOR: Renald Cormier, Plant Industry Branch, N.B.D.A.; Chuck Everett, Engineering Branch, N.B.D.A.

ACTIVITY OBJECTIVE: To evaluate and demonstrate the feasability and economic viability of mechanized transplanting of certain vegetables through plastic mulch and also of plug transplanting through plastic mulch.

ACTIVITY RESULTS: The use of a mulch transplanter with a plug mix attachment proved to be very acceptable with cucumber, the only vegetable used in this experiment. The technique is faster than the usual method of seeding and transplanting through mulch, so therefore will save on labor costs. This will allow the grower to put in additional acres under mulch.
The growers involved were very pleased with the plug mix and mulch transplanter. This type of machinery would be acceptable to larger growers particularly and to growers who put a fair amount of acres under mulch. It is felt the smaller vegetable growers would likely prefer transplanting or direct seeding through plastic mulch by hand.

ACTIVITY NUMBER: 80H10

ACTIVITY TITLE: Evaluation of Precision Vegetable Seeders.

ACTIVITY ORIGINATOR: Renald Cormier, Plant Industry Branch,
Chuck Everett, Engineering Branch,
N. B. Department of Agriculture.

ACTIVITY OBJECTIVE: To carry out an evaluation and demonstration on different types of precision vegetable seeders with vegetable growers in New Brunswick.

ACTIVITY RESULTS: A trial to evaluate five different types of precision vegetable seeders was carried out at two different locations in New Brunswick. These seeders were evaluated with carrot, cabbage, brussel sprouts and turnip.

Seeder performance varied with different crops and locations. All five seeders--Nibex, Webb, Milton, Stanhay, and Nodet Gougis seeders--have their good and bad points. Selection of a precision seeder depends on the cost, availability of service, parts and how the unit suits a particular enterprise.

The seeders were evaluated on their quality of work, ease of operation, and adjustments.

When direct seeding, there is a need for good soil preparation. Fields should be free of ridges and an excess number of rocks and it is imperative that seeding be done as early as the soil conditions permit. Additional trials are needed to properly assess these precision seeders.

ACTIVITY NUMBER: 80H11

ACTIVITY TITLE: Screening Roller Applied Herbicides on Native Stand Lowbush Blueberries.

ACTIVITY ORIGINATOR: Doug Doohan, Plant Industry Branch, Department of Agriculutre.

ACTIVITY OBJECTIVE: Ultimate--To develop a comprehensive weed control program for native stand lowbush blueberries. Immediate--To evaluate equipment for selective application of herbicides in lowbush blueberries and to evaluate herbicides for control of problem weeds.

ACTIVITY RESULTS: The blueberry weed roller worked relatively well, in that farmers were pleased with its performance. It will provide growers with a means of selective applying non-selective herbicides to tall weeds.

However, for growers not prepared to build their own weed roller, purchase will involve a moderate capital expenditure.

With respect to herbicide, Velpar herbicide may provide a very effective control for at least two serious problems: goldenrod and mealowsweet. It is recommended the program be continued and expanded for further data.

ACTIVITY NUMBER: 80H12

ACTIVITY TITLE: Blueberry Pest Management

ACTIVITY ORIGINATOR: G. W. Wood, Agriculture Canada, Box 20280, Fredericton.

ACITVITY OBJECTIVE: To develop a monitoring program for insect pests of lowbush blueberry, and demonstrate how such a program can reduce crop losses and thus contribute to increased production of the crop.

ACTIVITY RESULTS: Through the use of student manpower, and a monitoring program, it has been determined that an insect monitoring program is feasible for the lowbush blueberry industry in New Brunswick, and it can be useful in preventing severe crop loss by insect pests.

Except for blueberry maggot infestations, there were insufficient insect problems during the project period to really assess the impact of the program on the industry and to measure feedback to growers.

It will first be necessary to develop an acceptable program and convince growers of its advantages before pest management philosophy and practice will be completely transferred.

The need for a better base of reference material is evident, as is the need for strengthening the line of communication to growers. It is therefore essential to carry out a monitoring program with government aid for several seasons before the growers will accept the practice.

ACTIVITY NUMBER: 80H20

ACTIVITY TITLE: Evaluation of the use of plastic mulch and row tunnels on vegetable crops.

ACTIVITY ORIGINATOR: Renald Cormier, Plant Industry Branch, N.B.D.A.; Chuck Everett, Engineering Branch, N.B.D.A.

ACTIVITY DESCRIPTIONS: Demonstrations on the use of plastic mulches and row tunnels were carried out at different locations in New Brunswick in 1978-79. Black plastic was used for tomato, squash, pepper and cucumber transplants, and clear plastic over direct seeded corn and cucumbers.

ACTIVITY RESULTS: The program seems to have been a success. The total yield under black mulch in most cases was much higher than on bare soil. The quality of the fruit was also improved because the plastic kept it off the ground, and there were less growth defects under mulch, As well, the covering of the soil with black mulch film prevented the germination of many types of weeds.

Under the clear plastic, the sweet corn matured ten to fourteen days earlier, and the yield was significantly increased. The same thing appears to have occurred with cucumbers, however, no data was obtained.

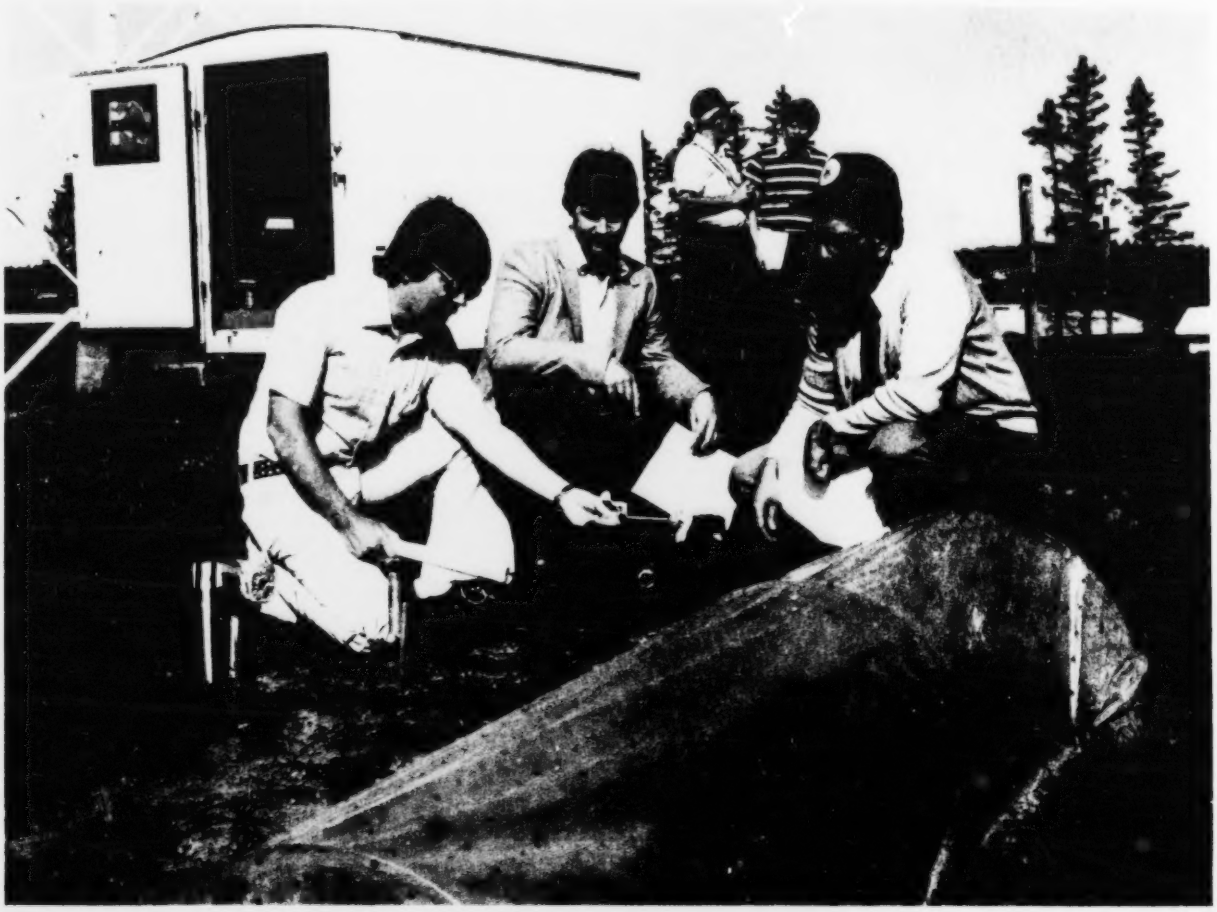
Both the black and clear mulches reduced the leaching of fertilizer by preventing water from perculating through the soil.

As for the row tunnels, results were not as convincing due to a lack of sufficient data to base conclusions upon. Only one out of four locations gave favorable results. In that case, yield was seven to ten days earlier under row tunnels than under black mulch for tomatoes, peppers and cucumbers. Yield was up also.

.... 2

It is felt more evaluation is required before the adoption of row tunnels is recommended.

With the use of plastic mulch, our farmers will be able to harvest vegetables up to two weeks earlier, thereby increasing their net farm income by taking advantage of higher prices earlier in the season. They will also become more competitive and obtain a larger share of the New Brunswick market.



GENERAL

ACTIVITY NUMBER: 79G3

ACTIVITY TITLE: To test and evaluate a side-mounted bush-hog rotary mower similar to the woods motor.

ACTIVITY ORIGINATOR: Hermel St.-Amand, R.R. # 6, Grand Falls, New Brunswick.

ACTIVITY OBJECTIVE: The purpose of this project is to evaluate the performance of the bush-hog 1050 rotary mower (Mechanical Drive) in mowing grass and bushes on back slopes and diversion terraces.

ACTIVITY RESULTS: The machine tested proved not to be adaptable for large scale commercial operations, but could be used for controlling undesirable bushes and weeds on diversion terraces within certain limitations. The machine lacks the flexibility necessary for commercial use.

The test demonstrated a number of limiting factors of this particular unit. The mower is side-mounted, and cannot be offset by telescoping devices, which results in all sections of the diversion terrace not being reachable.

The bush-hog rotary mower model 1050 does not need further evaluation because of its offset limitations, however, additional evaluation should be done on other types of mowers, which offer more potential.

ACTIVITY NUMBER: 80G3

ACTIVITY TITLE: Application of Meterological Data to Fruit Production.

ACTIVITY ORIGINATOR: N.B. Fruit Growers Association: P. J. Smith, N.B. Department of Agriculture.

ACTIVITY OBJECTIVE: To demonstrate and evaluate several techniques for the application of meterological data to fruit production.

ACTIVITY SUMMARY: As a result of collecting daily meterological data (maximum and minimum temperatures, precipitation) from 16 weather stations in the Saint John River Valley between Keswick and Jemseg, it has been demonstrated to fruit growers that current weather data can be used effectively as input to management decisions. The techniques used appear to perform with acceptable accuracy; but more detailed records of crop performance, insect appearance and disease levels are required for a more detailed analysis of the success of this approach.

ACTIVITY NUMBER: 80G5

ACTIVITY TITLE: Farm weather forecasts for Fruit and Vegetable Producers.

ACTIVITY ORIGINATOR: New Brunswick Fruit Growers Association; P. J. Smith, Agrometeorologist, N.B.D.A.

ACTIVITY OBJECTIVE: To provide a detailed and localized weather forecast to fruit and vegetable growers in a portion of the Saint John River Valley and to demonstrate and evaluate their effectiveness for use by the growers.

ACTIVITY RESULTS: Through a toll-free code-a-phone system set up in the Fredericton Weather Office, a detailed farm weather forecast was provided to farmers in a portion of the Saint John River Valley. While technically a success, the program was lacking in two areas: inadequate promotion prior to implementation and the mid-morning updating of forecasts was found to be too late for most users. The contents of the farm weather forecast provided a great deal more information that was available from other sources.

Those who have used the program have indicated its value to them. The provision of a high quality weather forecast, 24 hours a day in all locations in New Brunswick, would be of great practical value to farmers. Further efforts in this regard must ensure that the forecast is updated at an early morning hour and that it be available on a continuous basis.

LIVESTOCK

ACTIVITY NUMBER: 78L2

ACTIVITY TITLE: Evaluation of Compressed Air Manure Mover.

ACTIVITY ORIGINATOR: W. C. Durant, Agriculture Engineering Branch, N.B. Dept of Agriculture.

ACTIVITY OBJECTIVE: To evaluate under New Brunswick livestock housing conditions the suitability of using compressed air manure mover for moving manure from livestock buildings to storage.

ACTIVITY RESULTS: The equipment works excellent when manure is in a liquid state. It is preposed to modify the installation and operating procedures because of two basic problems: The first was the result of the chamber housing the main gate value controls being installed too close to a concrete wall which has no outside protection. Liquid manure entered the chamber from below and froze in extreme weather conditions. Rigid insulation on the outside of the concrete wall should remedy this. The other problem concerns the movement of frozen manure, which has proven difficult. However, this problem can be overcome by holding frozen manure in the building for a day or so until temperatures change and/or placing frozen manure in the chamber first and placing the soft or liquid manure on top thus preventing air from blowing through the manure when activated.

ACTIVITY NUMBER: 79L1

ACTIVITY TITLE: Demonstration to Roughen Cement Floors in Free Stall Dairy Barns.

ACTIVITY ORIGINATOR: Several farmers, submitted by W. C. Durant, N.B. Department of Agriculture.

ACTIVITY OBJECTIVE: To demonstrate to farmers the use of a machine, a scabbler, which roughens concrete floors to provide a better footing for cattle, thus reducing injuries.

ACTIVITY RESULTS: A machine for roughening concrete floor called a scabbler was demonstrated to approximately 60 dairy farmers in the Moncton, Sussex, Fredericton areas. As a result a Company in Moncton purchased a scabbling machine and provided a service to nine farmers in the three areas. Those farmers contacted who had scabbling done were very pleased with the results, and would recommend anyone having smooth and slippery floors avail themselves of this service. In addition, the cost was cheaper than originally anticipated for providing this service to farmers.

ACTIVITY NUMBER: 79L3

ACTIVITY TITLE: Transfer of Embryoes from Superior Brood Cows.

ACTIVITY ORIGINATOR: Carleton Victoria Holstein Club, C/O Bob Parkinson, R.R. # 3, Woodstock.

ACTIVITY OBJECTIVE: To improve bloodlines of local cattle by introducing superior offspring by embryo transfer.

ACTIVITY RESULTS: This new technology was very successful. The results of 40 embryoes transferred show a 68 percent conception rate, and a 74 percent female rate. There were no calving problems, however it is felt that non-surgical transfer would be easier. This would allow local vets to make the transfer, greatly reducing the cost.

There were no negative aspects found to the new technology.

ACTIVITY NUMBER: 79L6

ACTIVITY TITLE: Solar Ventilation Air Preheater for Swine Barn.

ACTIVITY ORIGINATOR: Joe Brennan, Johnville, N. B.

ACTIVITY OBJECTIVE: To evaluate solar collector storage for preheating air in a swine barn. The parameters include temperature maintenance, temperature rise and hog performance.

ACTIVITY RESULTS: The installation of a solar heat collector to preheat ventilation air definitely achieved desired results. It can safely be said that the system works in that air temperature rose as much as 23 degrees Farenheit, and ventilation of the building continued all winter with no moisture problems. There is a slight dust problem in the building as a result of the higher air flows.

The solar unit may be more favorable in farrowing or starter barns. Also, when the long axis of the building runs East-West, it may be preferable to install the collector on the side, rather than the end. Capital Costs will continue to be a deterrant to solar heat assist systems, and it seems that solar technology's acceptance in New Brunswick is slow compared to areas receiving more solar insulation.

One other note of interest: this project tends to help decrease the normal odor level because of the increased ventilation level.

ACTIVITY NUMBER: 79L7

ACTIVITY TITLE: Artificial Insemination for Dairy Goats in N.B.

ACTIVITY ORIGINATOR: Guy Bernard, Central Valley Branch, N.B. Dairy Goat Association.

ACTIVITY OBJECTIVE: To demonstrate and evaluate the use of artificial insemination for dairy goats in New Brunswick.

ACTIVITY RESULTS: So far as conception and live births from the project are concerned it was a total failure. But, those are not the criteria on which the project was based. Theoretically the program was successful in a number of ways. It demonstrated to a number of New Brunswick goatkeepers that the technology can be adapted and it provided a learning experience. Those involved in teaching New Brunswick goatkeepers the technique of artificial insemination for goats received their training under another program in Ontario.

When they attempted to transfer the technology within the province to other goatkeepers they incurred several problems. The most striking of which was the acquisition of a poorly designed instrument (inseminating rod). This particular piece of equipment was not like the unit they had been instructed to use in Ontario and it did not penetrate the cervix as intended. Failure to penetrate the cervix resulted in the semen being deposited in the vagina, not in the uterus as intended.

The reports of failure in the first attempts spread rapidly to others who had initially intended to participate in the

.... 2

program and they opted but before their animals were involved. Careful attention must be given to the equipment acquired for such a program in the future. There are many specialized items available for artificial insemination, but not all are suitable for work with goats.

ACTIVITY NUMBER: 80L9

ACTIVITY TITLE: Rabbit Pasterella Vaccine Project.

ACTIVITY ORIGINATOR: Christine Geoffrion, Technician, N.B. Department of Agriculture, Richibucto; Kent Meat Products Limited.

ACTIVITY OBJECTIVE. To test, develop and demonstrate a Pasterella vaccine for rabbits and to introduce this to producers as to increase herd health and production returns.

ACTIVITY RESULTS: Only a few conclusions can be drawn to date, but they are very important. Using a vaccine for Pasterella in Swine, (B.B. PAC), the equivalent of which is being used in Europe to prevent Pasterella in rabbits, it has been determined it will not prevent Pasterella infection when given to mature stock. The mature stock contacted the disease, but were not overly affected by it and recovered quickly without medication. All fryers born from injected mothers showed excellent health and an increased survival rate. No fryer from either a sick or healthy mother was affected by Pasterella and after the first day of life it was note that nestbox death did not exist. The vaccine seems efficient and more evaluation is needed.

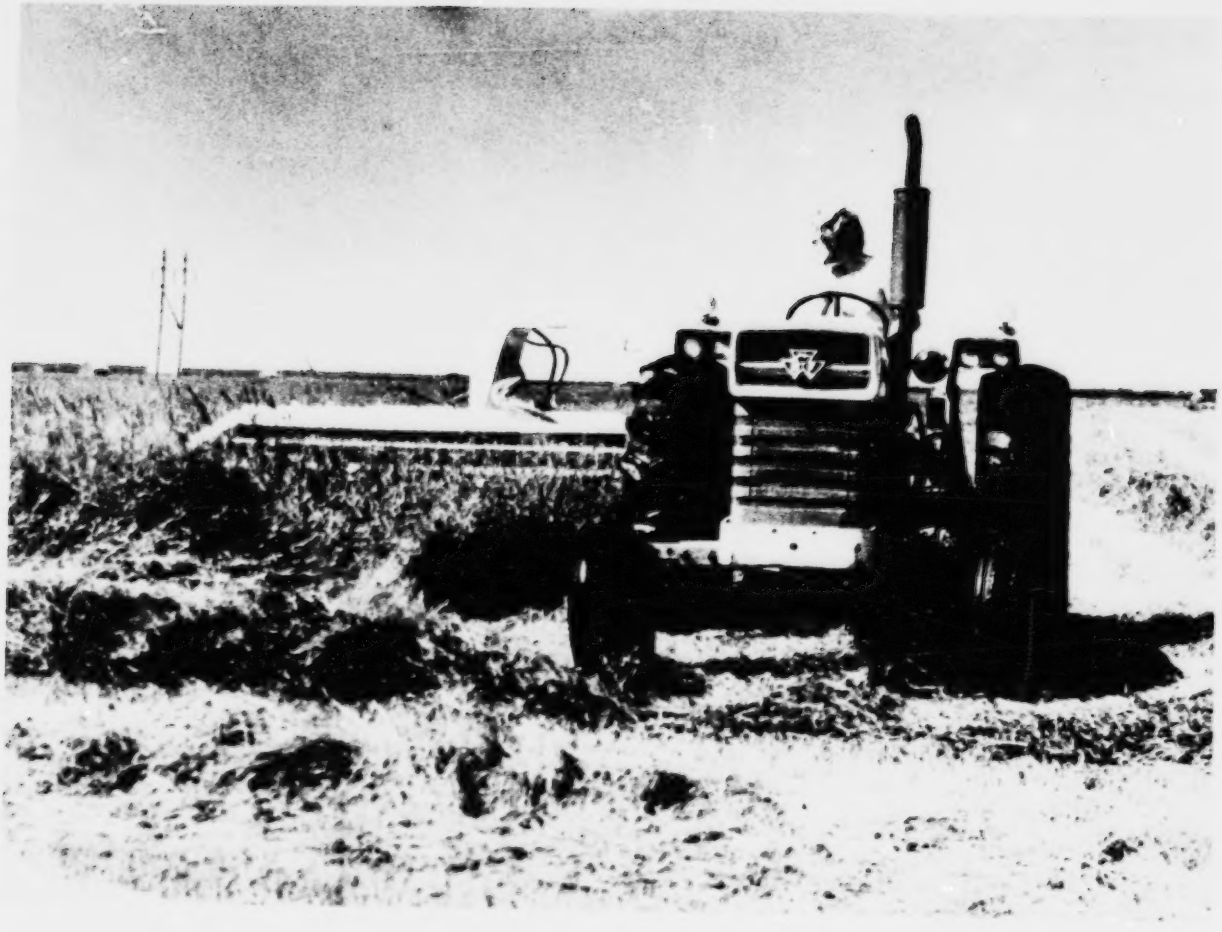
ACTIVITY NUMBER: 80L10

ACTIVITY TITLE: Installation of Equi-potential floor in Dairy Stanchion Barn.

ACTIVITY ORIGINATOR: Laurie Collette, District Agricultural Engineer, N.B. Dept. of Agriculture; Rudolph Knappe, Farmer, Fredericton Junction.

ACTIVITY OBJECTIVE: To install an equi-potential floor in a dairy stanchion barn in order to solve electrical pollution problems; to evaluate the benefits of the floor and to monitor stray voltages in the barn.

ACTIVITY RESULTS: The stray voltage in dairy barns, not uncommon in New Brunswick, is caused by a number of factors, including poor grounding and faulty wiring. Observance of the national electrical code for any wiring in the barn would be a first step to avoid stray voltages. The equi-potential floor, very common in the United States, is a partial solution to the problem. But proper grounding and elimination of faulty wiring are necessities in order to solve the problem. Further monitoring and study must be done before the effects of the equi-potential floor can be fully evaluated.



LIVESTOCK FEED

ACTIVITY NUMBER: 79LF2

ACTIVITY TITLE: Establishment of Legumes or Grass Legumes in Sod.

ACTIVITY ORIGINATOR: D. F. Walker, Plant Industry Branch, N.B. Dept. of Agriculture.

ACTIVITY OBJECTIVE: To assess the suitability of zero or minimum tillage equipment in the establishment of legumes or grass legumes mixture in sod.

ACTIVITY RESULTS: The use of the heavier seeding John Deere 1500 Power-Till Seeder has proven adequate in placing the seed such that soil moisture contact is obtained. This proper seed placement is necessary if the seed is to germinate.
Several of the 23 test areas in the province have been visited; but five out of six did not establish satisfactorily. The reasons for poor establishment were: seed bed too dry; competing grasses suppressed established seedlings, poor grazing management and low fertility.

ACTIVITY NUMBER: 79LF8

ACTIVITY TITLE: Byproduct Feeding of Hogs.

ACTIVITY ORIGINATOR: Stephen Moffett, Penobsquis, N.B.

ACTIVITY OBJECTIVE: To increase hog producers income and reduce their dependence on purchased rations through a liquid feeding system based on whey.

ACTIVITY RESULTS: Although the project was in full production for just more than half a year, results were definitely positive. Whey-meal slop feeding resulted in a saving of over $10 per pig in feed costs alone. As well, pigs also went to market one week sooner, increasing capacity of the barn by 250 pigs a year. Pigs were definitely healthier, clean and comfortable, although some heat was required on cold days to maintain good ventilation. The major negative aspect to this project is that there are no dealers in this area for the type of equipment used.
The main limiting factor to this type of production unit is the fact it is designed for the larger modern units requiring large capital investments.

ACTIVITY NUMBER: 79LF9

ACTIVITY TITLE: Off-Grade Potato Processing as Livestock Feed.

ACTIVITY ORIGINATOR: Gemvak Ltd.

ACTIVITY OBJECTIVE: To demonstrate and evaluate the feasibility both economically and practically of mixing hay and potatoes for feed.

ACTIVITY RESULTS: It has been demonstrated that potatoes and hay, mixed on a 3-1 basis provides good feed. Problems were encountered but were overcome once the operator became accustomed to the procedure.

Animals were found to adapt rapidly to this type of feed . . . within two days. Small animals would require protein supplement only, while 850-pound animals need no additives.

The project resulted in both good quality fresh and ensiled feed. The fresh mix is recommended for use during the supply season (October to May) with ensiled feed used from June through September.

A potato chopper specially designed for this project was used.

ACTIVITY NUMBER: 80LF4

ACTIVITY TITLE: Forage Quality Forecast.

ACTIVITY ORIGINATOR: Ralph McQueen, Agriculture Canada, Fredericton.

ACTIVITY OBJECTIVE: To motivate farmers to harvest the maximum amount of digestible nutrients in forage crops by advising them about changing nutritive values as crops grow; to assist farmers in their knowledge on forages and its conservation and to collect data on nutritive quality of forages.

ACTIVITY RESULTS: By assessing forage quality of samples collected each week at the Fredericton Research Station, weekly predictions of forage nutritional quality were made with reasonable accuracy. This information was distributed to farmers in time so that decisions about cutting dates could be made in conjunction with the 5-day weather forecast and hay-drying index.

Documenting the changes in forage quality as the crops matured emphasized to farmers that the consequence of delayed harvesting was inferior quality. More effort may be needed to teach farmers about the economic importance of forage quality. The benefits are large enough to justify greater effort.

The program was of benefit to farmers and an expanded data bank will improve the accuracy of predictions in future years.

In addition, improvements will have to be made in disseminating information. Sometimes delays with weather forecasts and cumputer analysis caused the information to arrive at farms too late. It is recommended that a special item on the CBC farm broadcast at noon may be the best alternative. The CBC has expressed an interest.

ACTIVITY NUMBER: 80LF7

ACTIVITY TITLE: Broiler Trial Evaluating the Feed Value of Local Wheat.

ACTIVITY ORIGINATOR: P.M. Snodden, N.B.D.A.

ACTIVITY OBJECTIVE: To compare the feed value of local and western wheat.

ACTIVITY RESULTS: Based on this trial using male broilers from Canada Packers in Sussex, one would conclude that the performance of broilers on local wheat rations would be equal to or better than similar birds fed rations based on western wheat.

Although no definite conclusion can be drawn because the test used only one lot of western and one lot of local wheat, it can be assumed local wheat had an energy value equal to that in western wheat and locally grown wheat could give comparable performance to western wheat when fed to other species of livestock.

The dollar return in this test was in favor of the birds fed on local wheat with an advantage of $63.04 per thousand birds marketed.

ACTIVITY NUMBER: 80LF11

ACTIVITY TITLE: The New Uni-System Harvester.

ACTIVITY ORIGINATOR: George Trueman, Sackville, N.B.

ACTIVITY OBJECTIVE: To demonstrate and evaluate the Uni-System Harvester and corn head.

ACTIVITY RESULTS: The farmer-owners of the New Idea Uni-System were quite satisfied with the performance and versatility of the machine. They feel it is well suited to a varied cropping program with large acreages and that it will allow greater versatility in making changes to the types of crops and acreages grown.

The New Idea Uni-System consists of a 708 Uni Power Unit; Uni Forage Harvester; Uni-Corn Head and Uni-Combine.

ACTIVITY NUMBER: 80LF15

ACTIVITY TITLE: Cereal Variety and Fertility Trials in the Grand Falls Area.

ACTIVITY ORIGINATOR: Jerome Damboise, Plant Industry Branch N.B.D.A, Florenceville; N.B.; Gille Pierre Cote, President, Grand Falls Soils and Crop Improvement Association.

ACTIVITY OBJECTIVE: To help primary producers improve their efficiency of grain production and eventually their net income, and to increase the quality and availability of locally produced grain.

ACTIVITY RESULTS: Erosion problems and build-up of potato diseases in the soil have made potato growers aware of the need of a rotation crop on potato land in the Grand Falls area. The climatic conditions of the area indicate that a grain crop with high yield potential and market demand would be beneficial to most farms.

Demonstration plots were established in the Grand Falls area to illustrate to growers the type of grain and varieties most suitable to the region. Both wheat and barley were planted and as a result of this project, growers are becoming more aware that the use of a good grain management practice is important to increase their net return per acre. More evaluation is needed to identify the best varieties and management techniques.

ACTIVITY NUMBER: 80LF16

ACTIVITY TITLE: Grain Production Management Project

ACTIVITY ORIGINATOR: D. F. Walker, Plant Industry Branch, N.B. Dept. of Agriculture; E. T. Pratt, Plant Industry Branch, N.B. Dept. of Agriculture.

ACTIVITY OBJECTIVE: To compare present grain production practices and returns to field testing of new technology, and to eventually transfer the best proven technology to farms throughout the province.

ACTIVITY RESULTS: Conclusions drawn from this demonstration have limitations, as they are based only on a year's results. Those results from an intensive management of the grain crop do indicate possible trends however.

There appears to be no advantage in increasing the seeding rate beyond 225 kg/ha, and no economic advantage in increasing the seeding rate beyond 150. On high fertility soils (potato soils) there seems to be no yield response to the addition of phosphorus or potash. Difolatan was applied to all plots at the headed stage of growth, but disease control diminished during the later part of the growing season and Septoria infection was moderate to heavy.

The original project has proven that in a given year, with intensive management, yield, percentage protein, and quality of grain can be improved.

ACTIVITY NUMBER: 80LF19

ACTIVITY TITLE: Evaluation of Push-Off Buckrake.

ACTIVITY ORIGINATOR: John Taylor, R.R. # 1, Debec.

ACTIVITY OBJECTIVE: To reduce costs and simplify methods of filling horizontal silos without losing speed or efficiency.

ACTIVITY RESULTS: The buckrake works well and never gave any trouble. The equipment is more than capable of dealing with the output of one forage harvester. There appeared to be no negative aspects or limiting factors to use of this equipment other than having a tractor of at least 35 horsepower with a 3 point hitch and external hydraulics.

The buckrake eliminates the need of a 4 wheel drive tractor, bulldozers or skidders on a livestock farm for this type of operation.

The initial cost is also extremely low and the buckrake could be manufactured in Canada.

The machine for this project came from England.

POTATOES

ACTIVITY NUMBER: 80P3

ACTIVITY TITLE: Pest Management Program: Activity 1, Generation of Data.

ORIGINATOR: Dr. P. N. Mosher, Department of Agriculture; Dr. M. E. MacGillivray, Agriculture Canada.

OBJECTIVE; To collect data for the pest management program.

RESULTS: Data was taken weekly from fifty-six New Brunswick processing potato fields, for the pest management program. It included field counts of Colorada potato beetles, flea beetles, three species of aphids, insect predators and parasites, grower practices and information on the climate. The information was analyzed and provided to 131 growers, researchers and agriculture officials.

The program was successful and from the information made available, the decisions by growers resulted in better quality potatoes and fewer pesticides used.

However a lack of information on grower management practices reduces the effectiveness of the program. These must be studied so a recommendation can be made on what future growing practices should be followed in particular areas. Methods should be refined to reduce costs and streamlined to speed up the availability of data collected for creating information and for research purposes.

ACTIVITY NUMBER: 80P4

ACTIVITY TITLE: Pest Management Program: Activity 11, Creation of Information.

ORIGINATOR: Dr. P. N. Mosher, Department of Agriculture; Dr. M. E. MacGillivray, Agriculture Canada.

OBJECTIVE: To analyze and computerize data and make it accessible to research and extension scientists well as New Brunswick potato growers.

RESULTS: Information has been created in a number of areas as a result of studying data collected in the activity, "Pest Management Program: Activity 1, Generation of Data". However, the computerization of this information has yet to be completed. The information already created includes recommendations to apply top Kills and insecticide.

ACTIVITY NUMBER: 80P5

ACTIVITY TITLE: Equipment Evaluation of the Allan Potato Planter.

ACTIVITY ORIGINATOR: Anders Jensen, New Denmark, N. B.

ACTIVITY OBJECTIVE: To test and evaluate the Allan Potato Planter a tuber unit planter, under New Brunswick conditions.

ACTIVITY RESULTS: The Allan Potato Planter is a 4 row type planter, designed to plant whole seed or cut the seed in two or four pieces for tuber unit planting.

The performance of the planter, to achieve adequate spacing, was largely dependent on the size of seed used. During the spring of 1980, results indicated that seed grade out at 6 - 10 oz. gave the best overall performance. Larger seed caused plugging at the cutting wheels and large misses in the field. Also plugging at the cutting wheels caused the cutting wheel to be damaged by the knives. Small seed under 4 oz. would jam between the rollers and convevor belts under the main hopper.

The average rate of work was 3.4 acres/hour, this included filling, turning and minor adjustments. Attempts were made to evaluate the nominal seed spacing however, the depth of planting covered the seed, even though the covering discs were removed.

ACTIVITY NUMBER: 80P9

ACTIVITY TITLE: Factors in Seed Potato Management That Will Influence Yield Responses such as Seed Warming Prior to Planting.

ACTIVITY ORIGINATOR: Glassville Seed Potato Producers Inc., Dale McIntosh, President; Glassville, N.B.

ACTIVITY OBJECTIVE: To show producers the effect of warming their seed potatoes prior to planting.

ACTIVITY RESULTS: The warming did not give the expected increase in yield. The length of the warming period is important; too long a period appears to reduce the effect on yield, although there was not enough data collected to draw any definite conclusions.

Warming the seed may be a practice which could be used to alter the yield response as well as the proportion of different size tubers, but further evaluation is needed.

ACTIVITY NUMBER: 80P12

ACTIVITY TITLE: Evaluation of high Limestone Applications on pH, yield, Uptake of Nutrients and Incidence of Scab in Two Potato Cultivars--Netted Gem and Kennebec.

ACTIVITY ORIGINATOR: R. P. Hinds, Agricultural Resource Centre, Florenceville.

ACTIVITY OBJECTIVE: To provide information on the effects of very high applications of limestone on potato yields, nutrient uptake, soil structure, scab incidence and pH.

ACTIVITY RESULTS: High limestone applications are being observed over a three-year period at five locations, since limestone effects are known to last for several years.

The first year's data can only indicate trends on total yield, quality of yield and soil and petiolar nutrient levels. Four tons per acre or less of limestone or gypsum seemed to be producing a higher yield, with a better size distribution and higher specific gravity than six or eight or zero tons of limestone per acre.

All Kennebec plots produced scab lesions on the potatoes, while Gems had very mild scab on one location on all plots and no scab at another location. The pH level did not seem to be a major influence. Two more years of observation will be needed before final results can be analyzed.

ACTIVITY NUMBER: 80P13

ACTIVITY TITLE: Evaluation of the Nimos Haulm Puller

ACTIVITY ORIGINATOR: Roche Consultants Ltee., Edmundston N.B.

ACTIVITY OBJECTIVE: The introduction of a new technology--the Nimos Haulm Puller, imported from Holland, to pull the foliage and stems of seed potatoes in order to reduce the danger of tubers disease.

ACTIVITY RESULTS: The machines, tested in ten different fields at various forward speeds, can do a good job when adjusted right and when working in a field with a few stones, maintaining the number of vines untouched at a very low level. However, until the effect of stones can be reduced and consequently until the effective field capacity of the machine can be largely improved, it would not likely be a useful tool for the majority of New Brunswick growers.

Many improvements must be designed and tested to achieve maximum performance. But it should be noted that the testing was done in fields that were not prepared as recommended by the manufacturer, notably the shape of ridges. The machine should be modified and tested further even though it shows serious limitations.